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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/691,153

10/21/2003

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EXAMINER

TRAN, NHAN T

ART UNIT

PAPER NUMBER

2622

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,153	Applicant(s) HIROSE, HISATAKA	
	Examiner Nhan T. Tran	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/21/2003, 8/24/2004, 2/6/2007, 4/20/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 8/24/2004, 2/6/2007 and 4/20/2007 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

However, the notification of reasons for refusal issued by Japanese Patent Office attached in the IDS filed 2/6/2007 is not considered because there is no English translation for this document.

Drawings

3. **Figures 4A & 4B** should be designated by a legend such as **--Prior Art--** because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 & 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima et al. (US 6,661,451) in view of Fukuda (US 2003/0020819).

Regarding claim 1, Kijima discloses a signal processing apparatus (Fig. 1) for processing an image signal outputted from an image sensing device (CCD 12) which has a plurality of photoelectric conversion elements (pixels) covered with a color filter (RGB color filter; see Fig. 2 and col. 3, lines 26-45) and which can be driven in a first reading method (high quality image mode as shown in Fig. 3; col. 3, lines 46-55) of separately reading signals from the respective photoelectric conversion elements (col. 4, lines 23-49) and a second reading method (high speed mode by skipping and adding pixel signals together as shown in Figs. 6 & 7) of adding signals generated by the photoelectric conversion elements by at least two signals corresponding to the photoelectric conversion elements of a same color (e.g., G color is added to G color, R

color is added to R color, etc., as shown in Fig. 7) then outputting the added signals (see col. 3, lines 59-67 and col. 7, lines 24-52) comprising:

- a switch (timing generator TG 20) that switches between the first reading method and the second reading method (col. 3, lines 46-51);

- a correction unit (combined circuits of 14, 16 & 26) that passes signals inputted from the image sensing device without correcting positions of barycenters of the inputted signals when the first reading method is set (see Fig. 1 and col. 2, lines 49-65 and note that combined circuits of 14, 16 & 26 do not perform any barycenters correction on the inputted signals).

Kijima does not explicitly teach that when the second reading method is set, the correction unit corrects positions of barycenters of the inputted signals.

However, as taught by Fukuda, when pixel signals are read out and added up, the average of the locations of pixels may not agree with a barycenter of a unit area for pixel skip-reading-out. Thus, positions of barycenters are corrected by an image processing unit and a system controller so that the average locations of added pixels are spatially corrected to agree with the barycenter of the unit area, thereby preventing a change in sensitivity and deterioration in image quality stemming from pixel skip-reading-out (see Fukuda, paragraphs [0108], [0111] and [0016]).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the apparatus in Kijima to include the teaching of Fukuda for correcting positions of barycenters of the inputted signals when the second reading method (skipping and

adding method) is set so as to prevent a change in sensitivity and deterioration in image quality as taught by Fukuda above.

Regarding claim 2, Kijima in view of Fukuda clearly teaches that said correction unit corrects the positions of barycenters of the inputted signals so that the intervals between the barycenters become equal in the vertical direction when the second reading method is set (see Fukuda, [0108] and [0096]).

Regarding claim 3, Kijima in view of Fukuda discloses that processing apparatus further comprising a signal processing unit (i.e., 30 in Kijima or 7 in Fukuda) that applies camera signal processes (i.e., image compression) suitable for signals whose color order is the same as that of the color filter to the signals outputted from said correction unit (see Fukuda, Fig. 1, [0049] and Kijima, Fig. 1, col. 2, line 62 – col. 3, line 5).

Regarding claim 4, as clearly shown in Figs. 2 & 7 of Kijima, said color filter has a Bayer arrangement of the three primary colors (R, G and B colors; col. 3, lines 40-45), and the signals generated by the photoelectric conversion elements of the same color in every other line are added in the second reading method (see Fig. 7).

Regarding claim 6, Kijima in view of Fukuda clearly discloses an image sensing apparatus comprising: an image sensing device (CCD 12 shown in Fig. 1 of Kijima), a driving unit (TG 20/CPU 24 shown in Fig. 1 of Kijima; col. 3, lines 16-25) that drives the

image sensing device; and the image processing apparatus according to claim 1 (see claim 1).

Regarding claims 7-10, these method claims are also met by the analyses of claims 1-4, respectively.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima et al. (US 6,661,451) in view of Fukuda (US 2003/0020819) and in further view of Maeda (US 7,145,598).

Regarding claim 12, although Kijima and Fukuda disclose the imaging apparatus comprises an image processing method as analyzed in claims 1 & 7, Kijima and Fukuda are silent about the method is realized by executing program codes stored in a storage medium.

It is well recognized in the art that an imaging apparatus may be implemented with program codes stored in a recording medium for realizing image processing steps when being executed by a controller or a processor as taught by Maeda, col. 2, line 65 – col. 3, line 17. It would enhance system flexibility by executing program codes instead of using hardware circuitry so that upgrade to image processing method would be easy and convenient.

Therefore, it would have been obvious to one of ordinary skill in the art to store program codes capable of realizing the signal processing method according to claim 7

in a storage medium such that the program codes would be executed by the processing apparatus to process image signals as suggested by Maeda. Doing this would enhance system flexibility so that upgrade to image processing method would be easy and convenient.

6. Claims 5 & 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima et al. (US 6,661,451) in view of Fukuda (US 2003/0020819) and in further view of Xue et al. (US 6,630,965).

Regarding claim 5, Kijima and Fukuda do not explicitly teach the limitations of claim 5 in which the correction unit performs operations of

$$P'_{2n} = 1/8 \times P_{2n-2} + 7/8 \times P_{2n}, \text{ and}$$

$P'_{2n-1} = 7/8 \times P_{2n-1} + 1/8 \times P_{2n+1}$, wherein P_{2n} and P_{2n-1} represent signals in an even number line and an odd number line, respectively, and P'_{2n} and P'_{2n-1} represent corrected signals in an even number line and an odd number line, respectively.

However, Xue teaches that when summing image signals for an even line, a weighting coefficient of 7/8 is multiplied to the current even line and a coefficient of 1/8 is multiplied to the line located two lines below the current even line (see Xue, **Fig. 4** for the newly even field, i.e., line 2 = $7/8Y_2 + 1/8Y_4$, and col. 3, lines 44-56). When summing image signals for an odd line, a weighting coefficient of 7/8 is multiplied to the current odd line and a coefficient of 1/8 is multiplied to the line located two lines above the current odd line (see Xue, **Fig. 3** for the newly odd field, i.e., line 3 = $1/8Y_1 + 7/8Y_3$

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and col. 3, lines 13-42). Such weighting ratio is to maintain an approximately normal vertical resolution to avoid degrading in quality when summing of image signals is performed (a frame is frozen) as taught by Xue in col. 1, lines 39-40, 61-63.

Therefore, it would have been obvious to one of ordinary skill in the art to further configure the combined apparatus of Kijima and Fukuda to include the teaching of Xue to arrive at the Applicant's claimed invention so that an approximately normal vertical resolution would be maintained to avoid degrading in quality when summing of image signals is performed as taught by Xue above.

Regarding claim 11, this method claim is also met by the analysis of claim 5.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Nhan Tran', with a stylized, flowing script.

NHAN T. TRAN
Patent Examiner